

EXHIBIT A

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WPS Quick Spec

Rick Dudley

November 20, 2020

Connex Vector (we probably won't need this) <https://github.com/connex/vector>

The system consists of a number of components all of which are deployed and upgradable based on an [Althea Peggy](<https://github.com/althea-net/peggy/blob/master/readme.md#key-components-you-can-run-today>) like multisig

1. A set of smart contracts on the Ethereum Mainnet(L1):
 - a. An ERC20 for WIRE tokens with a fixed total supply distributed at contract genesis
 - b. Something like a [Balancer Smart Pool](<https://github.com/balancer-labs/configurable-rights-pool>) which accepts WIRE, and popular stablecoins. The LP tokens from this pool are called WUSD. This contract prioritizes transactions from the sequencer over transactions from other users.
 - c. An Optimistic RollUp deposit contract which escrows either WIRE or WUSD and generates a "UTXO" to be sent to the other side of the ORU.
 - i. Withdrawals from this contract can be initiated two different ways:
 1. The standard way is by sending a transaction to the L2 Sequencer.
 2. If The Sequencer has failed, a withdrawal can be requested on L1 by:
 - a. A user submitting a valid transaction batch that was not submitted to L1 and includes the users withdrawal request. THIS HALTS THE L2 CHAIN [NOTE: this is not really something ORUs currently support.]
 - b. A user submitting a withdrawal request directly. If the deposit contract determines the request valid, The Sequencer has a limited time to respond to this request:
 - i. The Sequencer may authorize the withdrawal within the timeout and returns all of the user's funds and blocks them from using the system, taking the user's withdrawal deposit as punishment.
 - ii. The Sequencer fails to respond, the deposit contract returns all the user's funds, slashes the sequencer and no longer applies changes to the UTXO set, which allows all other users to safely withdraw their funds.
2. A set of smart contracts run by the Optimism Sequencer (L2):
 - a. UTXO manager, used to merge, send, and withdraw UTXOs which were generated on L1.
(The UTXO set is netted and sent to L1 via ORU transaction batching, updating the canonical set stored on L1.)

- b. Channel manager, which opens and closes user-to-user channels as well as sequencer-to-user channels.
- c. Voucher issuer, converts L2 WUSD to L2 vouchers of:
 - i. Tokens in the WUSD pool
 - ii. Tokens not in the WUSD pool (This requires a L1 WUSD price oracle.)
- d. Liquidity manager: (Fees earned by the sequencer in L2 are pooled here.)
- e. WIRE manager, the sequencer can use the WIRE staked on L1 as credit to route channel-based payments on L2.
- f. WUSD manager, the sequencer can stake WUSD on L1 to route payments on L2.
- g. Rebalancer, swaps between (L2 WIRE or L2 WUSD) for (L1 WIRE or L1 WUSD)

Notes:

Q: Why not have each user swap between themselves on L1 and themselves on L2?

A: Because then there would be no one on the L1 side to redeem the L2 holder of the voucher.

Q: If we create a special user on L1 so that every user swaps with it, now aren't all swaps fungible?

A: Yes, this is basically how Connex Indra works, but it's quite capital inefficient and rebalancing the UTXOs on L1 is slow, expensive and DoS prone. It's just cheaper to net channels on L2.